UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/842,304 | 04/25/2001 | Steven P. Williams | 9220-4 | 7124 |

20792 7590 08/25/2004

MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627

| EXAMINER | |
|---|---|
| NGUYEN, PHU K | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2671 | 9 |

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 09/842,304 | WILLIAMS ET AL. |
| | Examiner | Art Unit |
| | Phu K. Nguyen | 2671 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4-20,26-28,34-36,38,39,41-45,49 and 50* is/are allowed.

6)☒ Claim(s) *1-3,21,22,25,30,31,33,37,40,46 and 48* is/are rejected.

7)☒ Claim(s) *23, 24, 29, 32, 47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 21-22, 25, 30-31, 33, 37, 40, 46, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over KACYRA et al. (5,988,862) in view of MIGDAL.

As per claim 1, Kacyra teaches the claimed "method of modeling a three-dimensional object" (Kacyra, column 3, lines 27-36), comprising the step of: "generating a model of a three-dimensional surface of the object from a second plurality of points that define a coarse digital representation of the three-dimensional surface" (Kacyra, figure 1A, Geometry Fitting) and "a texture map

containing information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach "derived by mapping points within the texture map to a fine digital representation of the three-dimensional surface that is defined by a first plurality of three-dimensional points". However, Migdal teaches that such texture information which is "derived by mapping points within the texture map to a fine digital representation of the three-dimensional surface that is defined by a first plurality of three-dimensional points" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

Claim 2 adds into claim 1 "said generating step is preceded by the step of scanning a three-dimensional colored object to obtain a colored point cloud representation of the colored object" which Kacyra teaches in column 4, lines 6-10.

Claim 3 adds into claim 2 "said scanning step is followed by the step of wrapping the colored point cloud representation of the colored object to obtain the first plurality of three-dimensional points as a first plurality of three-dimensional colored points" which Kacyra does not explicitly teach. However, Migdal teaches that such color wrapping step is well known in the art (Migdal,

column 12, line 44 to column 13, line 12). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the wrapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

Claim 21 adds into claim 1 "the first plurality of three-dimensional points are colored points" (Kacyra, column 3, lines 34-36); and wherein said generating step comprises the steps of: "generating a model from the first plurality of three-dimensional colored points" (Kacyra, column 3, lines 49-50); Kacyra does not teach the model is a NURBS model; however, it would have been obvious to have Kacyra's geometry model be the NURBS model because the NURBS model provides a simple mathematical and accurate representative model for the object; Kacyra does not teach "converting the model into the second plurality of points; and determining the texture map for the coarse digital representation of the three-dimensional surface by: determining for a first texel in the texture map a respective texel coordinate that identifies a first spatial point on the coarse digital representation of the three-dimensional surface; and projecting the first spatial point to a first object point on the fine digital representation of the three-dimensional surface". Migdal teaches that such texture mapping with different level of detail (LOD) texture is well known (Migdal, column 14, lines 8-59). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's

method as claimed because the mapping of different level-of-detail (LOD) texture into the pixels of the geometry object enhances the mapping speed and the appearance of the textured representation of object of complex shape.

Claim 22 adds into claim 1 "the first plurality of three-dimensional points are colored points" (Kacyra, column 3, lines 34-36); and wherein said generating step comprises the steps of: "generating a model from the first plurality of three-dimensional colored points" (Kacyra, column 3, lines 49-50); Kacyra does not teach the model is a quadrangulation model; however, it would have been obvious to have Kacyra's geometry model be the quadrangulation model because the quadrangulation model provides a simple mathematical and accurate representative model for the object; Kacyra does not teach "converting the model into the second plurality of points; and determining the texture map for the coarse digital representation of the three-dimensional surface by: determining for a first texel in the texture map a respective texel coordinate that identifies a first spatial point on the coarse digital representation of the three-dimensional surface; and projecting the first spatial point to a first object point on the fine digital representation of the three-dimensional surface". Migdal teaches that such texture mapping with different level of detail (LOD) texture is well known (Migdal, column 14, lines 8-59). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of different level-of-detail (LOD) texture into the pixels of the geometry object

enhances the mapping speed and the appearance of the textured representation of object of complex shape.

As per claim 25, Kacyra teaches the claimed "method of modeling a three-dimensional colored object" (Kacyra, column 3, lines 27-36), comprising the step of: "generating a colored model of a surface of the colored object from a coarse triangulation of the surface" (Kacyra, figure 1A, Geometry Fitting) and "a texture map containing information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach "obtained by mapping points within the texture map to a fine triangulation of the surface that has colored vertices derived from three-dimensional colored scan data". However, Migdal teaches that such texture information which is "obtained by mapping points within the texture map to a fine triangulation of the surface that has colored vertices derived from three-dimensional colored scan data" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

As per claim 30, Kacyra teaches the claimed "method of modeling a three-dimensional colored object" (Kacyra, column 3, lines 27-36), comprising the step of: "generating a coarse triangulation model from a fine triangulation model of a

colored object that has colored vertices corresponding to physical locations on the colored object that have been digitally scanned" (Kacyra, figure 1A, Geometry Fitting) and "generating a texture map having an array of texture domains therein that retain color information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach "derived by mapping each texture domain to respective quadrangular patches on the coarse triangulation model and mapping spatial points on the quadrangular patches to object points on the fine triangulation model". However, Migdal teaches that such texture information which is "derived by mapping each texture domain to respective quadrangular patches on the coarse triangulation model and mapping spatial points on the quadrangular patches to object points on the fine triangulation model" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

Claim 31 adds into claim 30 "each of quadangular patch on the coarse triangulation model is within a respective grid track that traces a loop" which would have been obvious because all patches within the grid system must be tracked with a loop.

As per claim 33, Kacyra teaches the claimed "method of modeling a three-dimensional colored object" (Kacyra, lines 27-36), comprising the step of:

"capturing colored shape detail as three-dimensional point data from a physical object" (Kacyra, figure 1A, Geometry Fitting); it is noted that Kacyra does not teach "each datum comprising three real numbers providing geometric information and three integer numbers providing color information"; however, it would have been obvious to have Kacyra's geometry and color data in which "each datum comprising three real numbers providing geometric information and three integer numbers providing color information" because geometry data is 3D data and the color data contains three components RGB; and "converting the captured color shape detail into a coarse digital model of the physical object and a model enhancing texture map that maps points therein to the coarse digital model and retains color information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach "derived from mapping points within the coarse digital model to a finer digital model derived from the captured colored shape detail". However, Migdal teaches that such texture information which is "derived from mapping points within the coarse digital model to a finer digital model derived from the captured colored shape detail" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

As per claim 37, Kacyra teaches the claimed "method of modeling a colored object" (Kacyra, lines 27-36), comprising the step of: "automatically generating a triangulation model of the colored object from three-dimensional colored scan data that identify location and color of points on the colored object" (Kacyra, figure 1A, Geometry Fitting); it is noted that Kacyra does not teach the object is "defined by a plurality of quadrangular patches that extend within respective continuous grid tracks that loop around the triangulation model"; however, it would have been obvious to configure Kacyra's geometric shape (figure 1A) to "a plurality of quadrangular patches that extend within respective continuous grid tracks that loop around the triangulation model" because such representation enhances the appearance of the object's representation; and "generating a texture map that contains information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach "derived from mapping spatial points on the triangulation model to object points on another model derived from the colored scan data". However, Migdal teaches that such texture information which is "derived from mapping spatial points on the triangulation model to object points on another model derived from the colored scan data" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

As per claim 40, Kacyra teaches the claimed "method of modeling a three-dimensional colored object" (Kacyra, lines 27-36), comprising the step of: "generating a colored model of a surface of the colored object from a second plurality of points that define a coarse digital representation of the surface" (Kacyra, figure 1A, Geometry Fitting) and "a texture map containing information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach "derived by mapping points within the texture map to a fine digital representation of the surface that is defined by a first plurality of points". However, Migdal teaches that such texture information which is "derived by mapping points within the texture map to a fine digital representation of the surface that is defined by a first plurality of points" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

As per claim 46, Kacyra teaches the claimed "computer program product that models three-dimensional objects and comprises a computer-readable storage medium having computer-readable program code embodied in said medium" (Kacyra, column 3, lines 27-36), said computer-readable program code comprising: "computer-readable program code that generates a coarse triangulation model from a fine triangulation model of a colored object that has

colored vertices corresponding to physical locations on the colored object that have been digitally scanned" (Kacyra, figure 1A, Geometry Fitting) and "computer-readable program code that generates a texture map having an array of texture domains therein that retain color information" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach color information is "derived by mapping texels within the texture domains to spatial points on quadrangular patches on the coarse triangulation model and to object points on the fine triangulation model". However, Migdal teaches that such texture information which is "derived by mapping texels within the texture domains to spatial points on quadrangular patches on the coarse triangulation model and to object points on the fine triangulation model" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

As per claim 48, Kacyra teaches the claimed "computer program product that models three-dimensional colored objects and comprises a computer-readable storage medium having computer-readable program code embodied in said medium" (Kacyra, lines 27-36), said computer-readable program code comprising: "computer-readable program code that generates a triangulation model of a colored object that is defined by a plurality of quadrangular patches

that extend within respective continuous grid tracks that loop around the triangulation model, from three-dimensional colored scan data that identify location and color of points on the colored object" (Kacyra, figure 1A, Geometry Fitting) and "computer-readable program code that generates a texture map that contains information derived from mapping spatial points on the triangulation model to object points on another model" (Kacyra, column 4, lines 6-10). It is noted that Kacyra does not teach the texture is "derived from the colored scan data and is finer than the triangulation model". However, Migdal teaches that such texture information is "derived from the colored scan data and is finer than the triangulation model" is well known in the art (Migdal, column 7, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Migdal, to configure Kacyra's method as claimed because the mapping of texture into the pixels of the geometry object enhances the appearance of the textured representation of object of complex shape.

Claims 23, 24, 29, 32 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 23, the allowable feature is "said constructing step also comprises: <u>determining for a first texel in the texture map a respective texel</u>

coordinate that, using .psi..sup.-1, identifies a first spatial point on the coarse digital representation of the three-dimensional surface; and projecting along a normal from the first spatial point to a first object point on the fine digital representation of the three-dimensional surface.

In claim 24, the allowable feature is "determining for a first texel in the texture map a respective texel coordinate that identifies a first spatial point on the coarse digital representation of the three-dimensional surface; and projecting the first spatial point to a first object point on the fine digital representation of the three-dimensional surface.

In claims 29, the allowable feature is "a first texture domain in the plurality of texture domains comprises l columns and k rows of texels; wherein a first texel in the lth column of the first texture domain retains color information derived from mapping at least one of a center or corner of the first texel to a first patch on the coarse triangulation; and wherein a second texel in the first texture domain retains color information derived from mapping at least one of a center or corner of the second texel to a second patch on the coarse triangulation that is contiguous with the first patch at a patch boundary. "

In claim 32, the allowable feature is "a first texture domain in the plurality of texture domains comprises l columns and k rows of texels; wherein a first texel

in the lth column of the first texture domain retains color information derived from mapping at least one of a center or corner of the first texel to a first quadrangular patch on the coarse triangulation model; and wherein a second texel in the first texture domain retains color information derived from mapping at least one of a center or corner of the second texel to a second quadrangular patch on the coarse triangulation model that is contiguous with the first quadrangular patch at a patch boundary.

In claim 47, the allowable feature is "a first texture domain in the plurality of texture domains comprises l columns and k rows of texels; wherein a first texel in the lth column of the first texture domain retains color information derived from mapping at least one of a center or corner of the first texel to a first quadrangular patch on the coarse triangulation model; and wherein a second texel in the first texture domain retains color information derived from mapping at least one of a center or corner of the second texel to a second quadrangular patch on the coarse triangulation model that is contiguous with the first quadrangular patch at a patch boundary.

Claims 4-20, 26-28, 34-36, 38-39, 41-45, and 49-50 are allowed.

The following is an examiner's statement of reasons for allowance:

In claim 4, and its dependent claims 5-9, 17-20, the allowable feature is "generating a quadrangulation of the three-dimensional surface from the first

plurality of three-dimensional colored points; converting the quadrangulation into the second plurality of points; and determining the texture map for the coarse digital representation of the three-dimensional surface by: determining for a first texel in the texture map a respective texel coordinate that identifies a first spatial point on the coarse digital representation of the three-dimensional surface; and projecting the first spatial point to a first object point on the fine digital representation of the three-dimensional surface.

In claim 10, and its dependent claims 11-16, the allowable feature is determining the texture map for the coarse digital representation of the three-dimensional surface by: determining for a first texel in the texture map a respective texel coordinate that identifies a first spatial point on the coarse digital representation of the three-dimensional surface; and projecting the first spatial point to a first object point on the fine digital representation of the three-dimensional surface.

In claim 26, and its dependent claims 27-28, the allowable feature is "generating the texture map as a color map containing an array of texels; and wherein a first texel in the array of texels retains color information derived from mapping a center and at least a first corner of the first texel to respective spatial points on the coarse triangulation.

In claim 38, and its dependent claim 39, the allowable feature is "a first texture domain in the plurality of texture domains includes interior texels that map to a first quadrangular patch in the triangulation model and peripheral texels that map to at least a second quadrangular patch in the triangulation model.

In claim 41, and its dependent claim 42, the allowable feature is "generating a texture map having at least a first texture domain therein that comprises at least a first peripheral texel retaining color information derived from mapping the first peripheral texel to a first patch on a quadrangulation model of the three-dimensional object and at least a first interior texel retaining color information derived from mapping the first interior texel to a second patch on the quadrangulation model. "

In claim 43, and its dependent claims 44-45, the allowable feature is "decimating a fine quadrangular grid model of the three-dimensional object into a coarse quadrangular grid model of the three-dimensional object by removing tracks from the fine quadrangular grid model that contribute relatively little to the shape of the fine quadrangular grid model when compared to other tracks within the fine quadrangular grid model.

In claim 49, and its dependent claim 50, the allowable feature is "computer-readable program code that decimates a fine quadrangular grid model of the three-dimensional object into a coarse quadrangular grid model of the three-dimensional object by removing tracks from the fine quadrangular grid

model that contribute relatively little to the shape of the fine quadrangular grid model when compared to other tracks within the fine quadrangular grid model."

RESPONSE TO APPLICANT'S ARGUMENTS:

Applicant's arguments filed June 1, 2004 have been fully considered but they are not deemed to be persuasive.

**Claims 1, 25, 30, 33, 40, and 46:**

Applicant argues that the cited references do not teach "the generation of two models at different levels of resolutions, and then enhancing the rendering of the cheap coarse model using a texture map derived from expensive fine model". But in the claims, there is no mention of "enhancing the rendering of the cheap coarse model". For example, in claim 1, there are only a coarse model and a texture map of a fine model, and there is nothing indicated a mapping of the "fine-version" texture map into the coarse model. The cited references teach different models and their corresponding texture maps (Migdal, hierarchical data structure of the objects with multi-level of details); therefore include a coarse model and a fine texture model.

**Claims 37 and 48:**

In these claims, Applicant argues that the cited references do not teach "a texture map containing information derived from mapping points on one model to points on another model". Migdal teaches the generation of different texture maps for different models (Migdal, the texture maps in different LOD to the different objects according to the view points). Migdal's texture maps are

generated (column 9, lines 1-42) independent to its models and accordingly can be mapped into a plurality of different objects depend on the view points. Therefore, for different models on a level of details, the use of a certain texture map for different models in a LOD (column 8, lines 18-58) within a range of viewpoint implies "a texture map containing information derived from mapping points on one model to points on another model".

**Claim 21:**

Applicant argues that the cited references do not teach "determine texel coordinates by projecting between coarse and fine digital representations of a surface". Migdal's texture maps are generated (column 9, lines 1-42) by scanning the terrain and accordingly can be used to map into a plurality of different objects within a range of the view points. Therefore, for different models on a level of details within a range of viewpoints, the use of a certain texture map in a LOD for these different models (column 8, lines 18-58) implies "determine texel coordinates by projecting between coarse and fine digital representations of a surface (which in Migdal case, the models of the earth in the same range, but different distances from the viewpoints) implies "determine texel coordinates by projecting between coarse and fine digital representations of a surface".

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 -9796. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on (703)305-9798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu K. Nguyen
August 20, 2004